SIEMENS

SY CARD Ann Arbor

syngo® Dynamics Workplace

Siemens Medical Solutions USA, SY CARD, Ann Arbor

DICOM Conformance Statement

Revision: 9.5

12-17-2011

Table of Contents

1. INTRODUCTION 4
1.1 Purpose of this Document 4
1.1.1 Image Display Support (Software) 5
1.2 Sources for this Document 6
1.3 Acronyms and Abbreviations 6
2. NETWORK CONFORMANCE STATEMENT 7
2.1 Introduction 7
2.2 Implementation Model 7
2.2.1 Application Data Flow Diagram 7
2.2.2 Functional Definition of Application Entities 8
2.2.3 Sequencing of Real World Activities 8
2.3 Application Entity Specifications 8
2.3.1 Print Manager AE 8
2.3.1.1 Association Establishment Policies 8
2.3.1.1.1 General 8
2.3.1.1.2 Number of Associations 8
2.3.1.1.3 Asynchronous Nature 9
2.3.1.1.4 Implementation Identifying Information 9
2.3.1.2 Association Initiation by Real-World Activity 9
2.3.1.2.1 Real-World Activity – Print 9
2.3.1.3 Association Acceptance Policy 13
2.3.2 Storage Manager AE 13
2.3.2.1 Association Establishment Policies 14
2.3.2.1.1 General 14
2.3.2.1.2 Number of Associations 14
2.3.2.1.3 Asynchronous Nature 14
2.3.2.1.4 Implementation Identifying Information 14
2.3.2.2 Association Initiation by Real-World Activity 14
2.3.2.2.1 Real-World Activity – Store SR 14
2.3.2.2.2 Real-World Activity – Export Study 15
2.4 Communication Profiles 19
2.4.1 Supported Communications Stacks 19
2.4.2 OSI Stack 19
2.4.3 TCP/IP Stack 19
2.4.3.1 Physical Media Support 19
2.4.4 Point-to-Point Stack 19
2.5 Extensions/Specializations/Privatizations 19
2.6 Configuration 19
2.6.1 AE Title/Presentation Address Mapping 19
2.6.2 Configurable Parameters 20
2.7 Support of Extended Character Sets 20
3. MEDIA STORAGE CONFORMANCE STATEMENT 21
3.1 Introduction 21
3.2 Implementation Model 21
3.2.1 Application Data Flow Diagram 21
3.2.1.1 Description of the Data Flow Diagram for Writable Media. 21
3.2.1.2 Description of the Data Flow Diagram for the CDROM device. 22
3.2.1.3 Description of the Data Flow Diagram for the MOD device. 22
3.2.2.3.2.1.3 Description of the Data Flow Diagram for the DVD device. 23
Functional Definition of Application Entities 23
3.2.3 Sequencing of Real World Activities 23
3.2.4 File Meta Information for Implementation Class and Version 23

3.3 Application Entity Specifications 24
3.3.1 Display/Edit Application Entity Specification 24
3.3.1.1 File Meta Information for Display/Edit Application Entity 26
3.3.1.2 Real World Activities for the Display/Edit Application Entity 26
3.3.1.2.1 Real World Activity: Display Directory 27
3.3.1.2.2 Real World Activity: View Images 27
3.3.1.2.3 Real World Activity: Copy to Local Storage 28
3.3.1.2.4 Real World Activity: Update Studies 28
3.3.1.2.5 Real World Activity: Create MOD 28
3.3.1.2.6 Real World Activity: Create CD-R/DVD 28
3.4 Private elements exported to media 28
3.5 Augmented and Private Application Profiles 29
3.6 Extensions/Specializations/Privatizations 29
3.7 Configuration 29
3.8 Support of Extended Character Sets 29

List of Tables

Table 1.1-1 Software Review Supported Image Formats 6
Table 2.3-1 *syngo*® Dynamics Workplace Print Manager Supported SOP Classes 8
Table 2.3-2 Proposed Presentation Contexts - Print (Grayscale Printer) 9
Table 2.3-3 Grayscale Print Management Meta SOP Class 9
Table 2.3-4 Basic Film Session SOP Class DIMSE Services 10
Table 2.3-5 Supported Basic Film Session SOP Class Elements 10
Table 2.3-6 Basic Box Session SOP Class DIMSE Services 11
Table 2.3-7 Supported Basic Film Box SOP Class Elements 11
Table 2.3-8 Supported DIMSE Services for Basic Grayscale Image Box SOP Class 11
Table 2.3-9 Supported DIMSE Services for Printer SOP Class 12
Table 2.3-10 Supported Printer SOP Class Elements 12
Table 2.3-11 Proposed Presentation Contexts - Print (Color Printer) 12
Table 2.3-12 Basic Color Print Management Meta SOP Class 13
Table 2.3-13 Supported DIMSE Services for Basic Color Image Box SOP Class 13
Table 2.3-14 *syngo*® Dynamics Workplace Storage Manager Supported SOP Classes 14
Table 2.3-15 Proposed Presentation Contexts – Store SR 14
Table 2.3-16 Comprehensive SR SOP Class – Supported Templates 15
Table 2.3-15 Proposed Presentation Contexts – Export Study 19
Table 3.3-1 Display/Edit Application Entity Profiles, Real-World Activities, and Roles 25
Table 3.3-2 Supported Media Storage SOP Classes 26
Table 3.3-3 Media Review Supported Image Formats 28

List of Figures

Figure 2.2-1 *syngo*® Dynamics Workplace Implementation Model 7
Figure 3.2-1 CD-R Implementation Model 21
Figure 3.2-2 CDROM and DVDROM Implementation Model 22
Figure 3.2-3 MOD Implementation Model 22
Figure 3.2-4 DVD Implementation Model 23

1. INTRODUCTION

1.1 PURPOSE OF THIS DOCUMENT

This document is a DICOM Conformance Statement for the *syngo*® Dynamics Workplace.

The *syngo*® Dynamics Workplace provides diagnostic display of DICOM Images conforming to the Ultrasound Image Storage, Ultrasound Multi-frame Image Storage, X-ray Angiographic Image Storage and Secondary Capture Image Storage SOP Classes. DICOM Images conforming to the CT Image Storage, MR Image Storage, Computed Radiography Image Storage and Digital X-Ray Image Storage SOP Classes can be displayed for non-diagnostic reference review. The *syngo*® Dynamics Workplace is part of the Siemens *syngo*® Suite and is designed to operate in conjunction with the *syngo*® Dynamics Server. The *syngo*® Dynamics Workplace uses DICOM as an external interface standard. Non-DICOM internal communication mechanisms between the *syngo*® Dynamics Workplace and the *syngo*® Dynamics Server are used for the transfer and display of images.

The *syngo*® Dynamics Workplace provides support for the DICOM US Region Calibration Module. When ultrasound images contain this module, the *syngo*® Dynamics Workplace is able to interpret the region calibration data provided by the ultrasound acquisition unit. Standard pixel spacing attributes are also supported if provided with ultrasound captures. The *syngo*® Dynamics Workplace provides support for the DICOM Imager Pixel Spacing and Estimated Radiographic Magnification Factor attributes often sent with X-Ray Angiographic captures. When XA captures contain this data the *syngo*® Dynamics Workplace can interpret them. In the case where no calibration data is provided by the acquisition device, captures may be manually calibrated using the *syngo*® Dynamics Workplace.

The *syngo*® Dynamics Workplace has the following explicit DICOM capabilities:

- Prints images to DICOM printers, acts as a Service Class User of the Print Management Services
- Reads studies from DICOM Media Storage, a File-set Reader
- Writes studies to DICOM Media Storage, a File-set Updater
- Deletes studies from DICOM Media Storage, a File-set Updater
- Creates a DICOMDIR on DICOM Media Storage, a File-set Creator
- Shares ultrasound related measurements, stores DICOM Structured Report's as an SCU to external AE's
- Imports ultrasound related measurements from qualified acquisition products, reads DICOM Structured Report data
- Exports studies to a configured DICOM AE, acts as a Service Class User for DICOM Storage

1.1.1 Image Display Support (Software)

The *syngo*® Dynamics Workplace displays Computed Radiography, Computed Tomography, Digital X-Ray, Magnetic Resonance, Nuclear Medicine, Secondary Capture, Ultrasound and X-Ray Angiographic images from the *syngo*® Dynamics Server or from supported DICOM media.

The *syngo*® Dynamics Workplace supports the image formats shown in Table 1.1-1 when displaying images using software. The *syngo*® Dynamics Workplace supports the display of 8, 10, 12 and 16 bit image formats.

Photometric Interpretation	Transfer Syntax	Planar Configuration
MONOCHROME1	Uncompressed Implicit VR Little Endian 1.2.840.10008.1.2	N/A
	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	N/A
	RLE Lossless Image Compression 1.2.840.10008.1.2.5	N/A
	JPEG Lossy Baseline (Process 1) 1.2.840.10008.1.2.4.50	N/A
	JPEG Lossless, Non-Hierarchical (Process 14) 1.2.840.10008.1.2.4.57	N/A
	JPEG Lossless, Non-Hierarchical (Process 14) 1.2.840.10008.1.2.4.70	N/A
MONOCHROME2	Uncompressed Implicit VR Little Endian 1.2.840.10008.1.2	N/A
	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	N/A
	RLE Lossless Image Compression 1.2.840.10008.1.2.5	N/A
	JPEG Lossy Baseline (Process 1) 1.2.840.10008.1.2.4.50	N/A
	JPEG Lossless, Non-Hierarchical (Process 14) 1.2.840.10008.1.2.4.57	N/A
	JPEG Lossless, Non-Hierarchical (Process 14) 1.2.840.10008.1.2.4.70	N/A
RGB	Uncompressed Implicit VR Little Endian 1.2.840.10008.1.2	0 - Chunky
	Uncompressed Implicit VR Little Endian 1.2.840.10008.1.2	1 - Planar
	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	0 - Chunky
	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	1 - Planar
	JPEG Lossless, Non-Hierarchical (Process 14) 1.2.840.10008.1.2.4.70	0 - Chunky
	JPEG Lossless, Non-Hierarchical (Process 14) 1.2.840.10008.1.2.4.70	1 - Planar
PALETTE COLOR	Uncompressed Implicit VR Little Endian 1.2.840.10008.1.2	N/A
	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	N/A
	RLE Lossless Image Compression 1.2.840.10008.1.2.5	N/A
	JPEG Lossless, Non-Hierarchical (Process 14) 1.2.840.10008.1.2.4.70	N/A
YBR_FULL	Uncompressed Implicit VR Little Endian 1.2.840.10008.1.2	0 - Chunky
	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	0 - Chunky
	RLE Lossless Image Compression 1.2.840.10008.1.2.5	0 - Chunky
	RLE Lossless Image Compression 1.2.840.10008.1.2.5	1 - Planar
	JPEG Lossless, Non-Hierarchical (Process 14) 1.2.840.10008.1.2.4.70	0 - Chunky

YBR_FULL_422	JPEG Lossy Baseline (Process 1) 1.2.840.10008.1.2.4.50	1 - Planar

Table 1.1-1 Software Review Supported Image Formats

1.2 SOURCES FOR THIS DOCUMENT

ACR-NEMA Digital Imaging and Communications in Medicine (DICOM) Version 3.0 Parts 1 – 18.

1.3 ACRONYMS AND ABBREVIATIONS

The following Acronyms and abbreviations are used in this document:

- ACR American College of Radiology
- AE Application Entity
- DICOM Digital Imaging and Communications in Medicine
- FSC File-set Creator
- FSR File-set Reader
- FSU File-set Updater
- NEMA National Electrical Manufacturers Association
- PDU Protocol Data Unit
- SCP Service Class Provider
- SCU Service Class User
- SOP Service Object Pair
- SR Structured Report
- TCP/IP Transmission Control Protocol/Internet Protocol
- UID Unique Identifier

2. NETWORK CONFORMANCE STATEMENT

2.1 INTRODUCTION

This section of the DICOM conformance statement specifies the compliance to the DICOM conformance requirements for the relevant Networking features of the *syngo*® Dynamics Workplace. Note that the format of this section follows the format described in DICOM Standard PS 3.2 (Conformance). Please refer to that part of the standard while reading this section.

The *syngo*® Dynamics Workplace is a medical imaging workstation designed to provide diagnostic review of Ultrasound images and X-Ray Angiographic images and reference review of CR, CT, DX and MR. It operates in conjunction with the *syngo*® Dynamics Server for retrieval and display of images. Refer to the *syngo*® Dynamics Server DICOM Conformance Statement for a description of the *syngo*® Dynamics Server's DICOM capabilities.

This station uses DICOM services to print images to DICOM Printers.

2.2 IMPLEMENTATION MODEL

The *syngo*® Dynamics Workplace DICOM Service is implemented as a separate process that can initiate associations with remote Application Entities. The Service is started automatically during system start-up and will remain active until system shut down.

2.2.1 Application Data Flow Diagram

The Implementation Model for the *syngo*® Dynamics Workplace DICOM network services is shown in Figure 2.1-1.

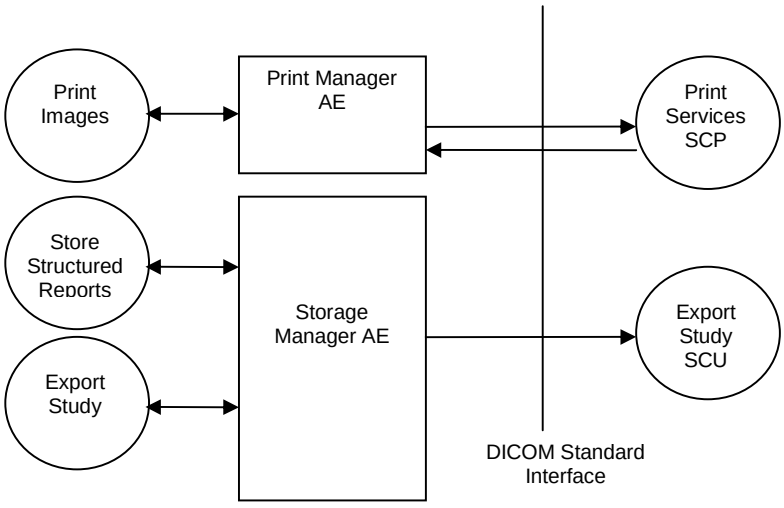

Figure 2.2-1 *syngo*® Dynamics Workplace Implementation Model

2.2.2 Functional Definition of Application Entities

2.2.2.1 Functional Definition of "Print Manager" Application Entity

The Application Entity of the Workplace Print Manager acts as an SCU for the Basic Grayscale and Color Print Management Meta SOP classes. The user can print selected images or all images in a series to a DICOM printer.

The *syngo*® Dynamics Workplace Print Manager Application Entity operates in conjunction with two files for each printer.

The Printer Template file describes the capabilities of a particular printer. The Printer Template file resides on the *syngo*® Dynamics Server and is identical for all *syngo*® Dynamics Workplaces that connect to the *syngo*® Dynamics Server.

The Printer Descriptor file describes the default settings for the specific printer. A graphical user interface is available to allow configuration of the default settings.

2.2.2.2 Functional Definition of "Storage Manager" Application Entity

The Application Entity of Storage Manager acts as an internal interface to append DICOM Comprehensive Structured Reports to existing studies. This interaction occurs between the *syngo*® Dynamics Workplace and the *syngo*® Dynamics Server only. Sharing and exporting of the appended SR data with an external AE is performed by the *syngo*® Dynamics Server.

When an ultrasound study review session is completed at the *syngo*® Dynamics Workplace, a DICOM Comprehensive Structured Report will be updated and appended to the study with the current measurement and observation information.

2.2.3 Sequencing of Real World Activities

Not Applicable

2.3 APPLICATION ENTITY SPECIFICATIONS

2.3.1 Print Manager AE

The *syngo*® Dynamics Workplace Print Manager Application provides standard conformance to the following DICOM V3.0 SOP Classes as an SCU.

SOP Class	SOP Class UID
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9
Basic Color Print Management Meta	1.2.840.10008.5.1.1.18

Table 2.3-1 *syngo*® Dynamics Workplace Print Manager Supported SOP Classes

2.3.1.1 Association Establishment Policies

The *syngo*® Dynamics Workplace Print Manager Application will initiate an association with the configured DICOM Print SCP. The *syngo*® Dynamics Workplace Print Manager Application does not accept associations.

2.3.1.1.1 General

The Print Manager Application offers a maximum PDU size of 32 KB (32,768 bytes) upon association initiation.

2.3.1.1.2 Number of Associations

The *syngo*® Dynamics Workplace Print Manager Application will queue multiple print jobs such that it only establishes one association as an SCU at a time when it manages multiple DICOM printer destinations.

2.3.1.1.3 Asynchronous Nature

The *syngo*® Dynamics Workplace Print Manager Application does not support asynchronous operations.

2.3.1.1.4 Implementation Identifying Information

The *syngo*® Dynamics Workplace Print Manager Application uses the following implementation identifying parameters:

- Implementation Class UID 1.2.840.113680.19.1
- Implementation Version Name DS19.1_

2.3.1.2 Association Initiation by Real-World Activity

The *syngo*® Dynamics Workplace Print Manager Application initiates associations for the following activities:

The user wants to print grayscale images to a DICOM printer.
The user wants to print color images to a DICOM Printer

2.3.1.2.1 Real-World Activity – Print

2.3.1.2.1.1 Associated Real World Activity - Print

An association is established when the user initiates a print operation from the graphical user interface. Individual images, a range of images, or the entire study can be sent to the configured DICOM Print device. The association is opened when the first image is transferred and closed when the last image transfer is complete. The user can choose several parameters such as the layout of the film and number of copies to be printed. The *syngo*® Dynamics Workplace Print Management Application interprets a Printer Status of 'WARNING' the same as a 'FAILURE'. For correct operation the DICOM Print device should be configured not to return a Printer Status of 'WARNING' for routine operations.

2.3.1.2.1.2 Proposed Presentation Contexts - Print (Grayscale Printer)

The *syngo*® Dynamics Workplace Print Management Application will propose the Presentation Contexts shown in Table 2.3-2.

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
Basic Grayscales Print Management Meta	1.2.840.10008.5.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Table 2.3-2 Proposed Presentation Contexts - Print (Grayscale Printer)

2.3.1.2.1.2.1 SOP Specific Conformance to Basic Grayscale Print Management Meta SOP Class

The *syngo*® Dynamics Workplace Print Management Application provides standard conformance to the Grayscale Meta SOP classes as an SCU. All mandatory elements of these classes are supported. Specifically, with respect to the Basic Grayscale Print Management Meta SOP class this means conformance to the underlying SOP classes shown in Table 3.2-3.

Supported SOP classes as Basic Grayscale Print Management Meta SOP Class	
SOP Class Name	**SOP Class UID**
Basic Film Session	1.2.840.10008.5.1.1.1
Basic Film Box	1.2.840.10008.5.1.1.2
Basic Grayscale Image Box	1.2.840.10008.5.1.1.4
Printer	1.2.840.10008.5.1.1.16

Table 2.3-3 Grayscale Print Management Meta SOP Class

2.3.1.2.1.2.1.1 SOP Specific Conformance to Basic Film Session SOP Class

The *syngo*® Dynamics Workplace Print Management Application provides standard conformance to the Basic Film Session SOP Class as an SCU.

DICOM specified usage:

M = Mandatory
U = User Option

Supported DIMSE Services are shown in table 2.3-4.

Name	Usage	Description
N-Create	M	Creates the Film Session.
N-Set	U	Not used.
N-Delete	U	Deletes the Film Session.
N-Action	U	Not used.

Table 2.3-4 Basic Film Session SOP Class DIMSE Services

Supported Basic Film Session SOP Class Elements are shown in Table 2.3-5.

Attribute Name	Attribute Tag	Usage	Valid Range
Number of Copies	(2000,0010)	U	1 - 99
Print Priority	(2000,0020)	U	HIGH MED LOW
Medium Type	(2000,0030)	U	BLUE FILM CLEAR FILM PAPER CURRENT
Film Destination	(2000,0040)	U	PROCESSOR MAGAZINE
Film Session Label	(2000,0050)	U	Incrementing Integer created by Print Manager Application

Table 2.3-5 Supported Basic Film Session SOP Class Elements

2.3.1.2.1.2.1.2 SOP Specific Conformance to Basic Film Box SOP Class

The *syngo*® Dynamics Workplace Print Management Application provides standard conformance to the Basic Film Box SOP Class as an SCU.

DICOM specified usage:

M = Mandatory
U = User Option

Supported DIMSE Services are shown in table 2.3-6.

Name	Usage	Description
N-Create	M	Creates the Film Box.
N-Set	U	Not used.
N-Delete	U	Deletes the Film Box. Issued after film is printed.
N-Action	M	PRINT. Sent after each Film Box is filled and to print a partially

		filled Film Box.

Table 2.3-6 Basic Box Session SOP Class DIMSE Services

Supported Basic Film Box SOP Class Elements are shown in Table 2.3-7.

Attribute Name	Attribute Tag	Usage	Valid Range
Film Orientation	(2010,0040)	U	PORTRAIT LANDSCAPE
Film Size ID	(2010,0050)	U	8INX10IN 14INX17IN 10INX12IN 10INX14IN 11INX14IN 14INX14IN 24CMX24CM 24CMX30CM
Magnification Type	(2010,0060)	U	REPLICATE BILINEAR CUBIC NONE
Border Density	(2010,0100)	U	BLACK WHITE
Empty Image Density	(2010,0110)	U	BLACK WHITE
Min Density	(2010,0120)	U	0 - 1000
Max Density	(2010,0130)	U	0 - 1000
Trim	(2010,0140)	U	YES, NO

Table 2.3-7 Supported Basic Film Box SOP Class Elements

2.3.1.2.1.2.1.3 SOP Specific Conformance to Grayscale Image Box SOP Class

The *syngo*® Dynamics Workplace Print Management Application provides standard conformance to the Grayscale Image Box SOP Class as an SCU. No optional attributes are supported for the Basic Grayscale Image Box SOP Class.

DICOM specified usage:

M = Mandatory
U = User Option

Supported DIMSE Services are shown in table 2.3-8.

Name	Usage	Description
N-Set	M	The SCP for each potential image of the film box creates an image box instance. Only those instances that actually contain images will be updated with the N-SET message.

Table 2.3-8 Supported DIMSE Services for Basic Grayscale Image Box SOP Class

2.3.1.2.1.2.1.4 SOP Specific Conformance for Printer SOP Class

The *syngo*® Dynamics Workplace Print Management Application provides standard conformance to the Printer SOP Class as an SCU.

DICOM specified usage:

M = Mandatory
U = User Option

Supported DIMSE Services are shown in table 2.3-9.

Name	Usage	Description
N-Event-Report	M	Ignored and not handled.
N-Get	U	Issued prior to creating the Print Session to get printer status.

Table 2.3-9 Supported DIMSE Services for Printer SOP Class

Supported Printer SOP Class Elements are shown in Table 2.3-10.

Attribute Name	Attribute Tag	Usage	Valid Range
Manufacturer	(0008,0070)	U	Vendor Specific
Manufacturer's Model	(0008,1090)	U	Vendor Specific
Software Version(s)	(0018,1020)	U	Vendor Specific
Printer Status	(2110,0010)	U	NORMAL WARNING (See Note) FAILURE
Printer Name	(2110,0030)	U	Vendor Specific

Table 2.3-10 Supported Printer SOP Class Elements

Note: The *syngo*® Dynamics Workplace Print management Application does not support a Printer Status of 'WARNING'. This status is interpreted the same as 'FAILURE' and the print operation will not proceed. The DICOM Print device should be configured not to return a Printer Status of 'WARNING' for routine operation.

2.3.1.2.1.3 Proposed Presentation Contexts - Print (Color Printer)

The *syngo*® Dynamics Workplace Print Management Application will propose the Presentation Contexts shown in Table 2.3-11.

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Basic Color Print Management Meta	1.2.840.10008.5.1.1.18	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Table 2.3-11 Proposed Presentation Contexts - Print (Color Printer)

2.3.1.2.1.3.1 SOP Specific Conformance to Basic Color Print Management Meta SOP Class

The *syngo*® Dynamics Workplace Print Management Application provides standard conformance to the Basic Color Print Management Meta SOP classes as an SCU. All mandatory elements of these classes are supported. Specifically, with respect to the Basic Color Print Management Meta SOP class this means conformance to the underlying SOP classes shown in Table 2.3-12.

Supported SOP classes as Basic Color Print Management Meta SOP Class	
SOP Class Name	SOP Class UID
Basic Film Session	1.2.840.10008.5.1.1.1
Basic Film Box	1.2.840.10008.5.1.1.2
Basic Color Image Box	1.2.840.10008.5.1.1.4.1
Printer	1.2.840.10008.5.1.1.16

Table 2.3-12 Basic Color Print Management Meta SOP Class

The *syngo*® Dynamics Workplace Print Management Application makes identical use of the Basic Film Session SOP Class, Basic Film Box SOP Class and Printer SOP Class elements that have been previously described for grayscale image printing. Therefore these will not be described again in this section on color printing. However, it should be noted that certain attributes defined in the Basic Film Session SOP Class (i.e. Medium Type) are likely to require printer/print server specific media.

2.3.1.2.1.3.1.1 SOP Specific Conformance to Basic Color Image Box SOP Class

The *syngo*® Dynamics Workplace Print Management Application provides standard conformance to the Basic Color Image Box SOP Class as an SCU. No optional attributes are supported for the Basic Color Image Box SOP Class.

DICOM specified usage:
M = Mandatory
U = User Option

Supported DIMSE Services are shown in table 2.3-13.

Name	Usage	Description
N-Set	M	The SCP for each potential image of the film box creates an image box instance. Only those instances that actually contain images will be updated with the N-SET message.

Table 2.3-13 Supported DIMSE Services for Basic Color Image Box SOP Class

2.3.1.3 Association Acceptance Policy

The *syngo*® Dynamics Workplace Print Manager Application does not accept associations.

2.3.2 Storage Manager AE

The *syngo*® Dynamics Workplace Storage Manager AE provides standard conformance to the following DICOM V3.0 SOP Classes as an SCU.

SOP Class	SOP Class UID	SCU
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Y
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Y
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Y
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Y
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Y
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Y
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Y
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Y
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	Y
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	Y
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	Y
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	Y
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	Y
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	Y
X-ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Y
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Y

SOP Class	SOP Class UID	SCU
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Y
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Y
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Y

Table 2.3-14 *syngo*® Dynamics Workplace Storage Manager Supported SOP Classes

2.3.2.1 Association Establishment Policies

The *syngo*® Dynamics Workplace Storage Manager AE will initiate an association with the configured *syngo*® Dynamics Server each time there is an update to the data in a Structured Report. The *syngo* Dynamics Workplace will initiate an association with a remote DICOM AE when the user manually triggers an export for a study. The *syngo*® Dynamics Workplace Storage Manager AE does not accept associations.

2.3.2.1.1 General

Application Context Name – 1.2.840.10008.3.1.1.1

2.3.2.1.2 Number of Associations

The *syngo*® Dynamics Workplace Storage Manager AE will open only one association for each study transfer to a remote AE.

2.3.2.1.3 Asynchronous Nature

The *syngo*® Dynamics Workplace Storage Manager AE does not support asynchronous operations.

2.3.2.1.4 Implementation Identifying Information

The *syngo*® Dynamics Workplace Storage Manager AE uses the following implementation identifying parameters:

- Implementation Class UID 1.3.12.2.1107.5.8.11
- Implementation Version Name KINETDX

2.3.2.2 Association Initiation by Real-World Activity

The *syngo*® Dynamics Workplace Storage Manager AE initiates associations for the following activities:

- The user manually triggers a study send operation to a remote DICOM AE.
- The user closes a study after making updates.

2.3.2.2.1 Real-World Activity – Store SR

2.3.2.2.1.1 Associated Real World Activity – Store SR

An association with the *syngo* Dynamics Server is established when the user exists the review of an ultrasound study. Updated SR objects will be appended to the study on the *syngo*® Dynamics Server.

2.3.2.2.1.2 Proposed Presentation Contexts – Store SR

The *syngo*® Dynamics Workplace Storage Manager AE will propose the Presentation Context shown in Table 2.3-15.

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

Table 2.3-15 Proposed Presentation Contexts – Store SR

2.3.2.2.1.2.1 SOP Specific Conformance to Comprehensive SR

The *syngo*® Dynamics Workplace Storage Manager AE provides standard conformance to the DICOM Comprehensive SR SOP Class as an SCU. All mandatory attributes of the SOP Class are supported. Supported SR Template's are listed below.

Supported Templates in relation to the Comprehensive SR SOP Class	
Template ID (TID)	**Template Description**
5000	OB-GYN Ultrasound Procedure Report
5100	Vascular Ultrasound Procedure Report
5200	Adult Echocardiography Procedure Report
5220	Pediatric, Fetal and Congenital Cardiac Ultrasound Reports

Table 2.3-16 Comprehensive SR SOP Class – Supported Templates

2.3.2.2.2 Real-World Activity – Export Study

2.3.2.2.2.1 Associated Real World Activity – Export Study

An association with a remote DICOM AE is established when the user manually triggers the export of a study to a remote DICOM AE. The study will be sent to the configured remote DICOM AE from the *syngo* Dynamics Workplace.

2.3.2.2.2.2 Proposed Presentation Contexts – Export Study

The *syngo*® Dynamics Workplace Storage Manager AE will propose the Presentation Contexts shown in Table 2.3-15.

Presentation Context Table				
Abstract Syntax		**Transfer Syntax**	**Role**	**Extended Negotiation**
Name	**UID**	**Name UID**		
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.57 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None

Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.57 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Baseline (Process 1) 1.2.840.10008.1.2.4.50 RLE Lossless 1.2.840.10008.1.2.5	SCU	None
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Baseline (Process 1) 1.2.840.10008.1.2.4.50 RLE Lossless 1.2.840.10008.1.2.5	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Baseline (Process 1) 1.2.840.10008.1.2.4.50 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Baseline (Process 1) 1.2.840.10008.1.2.4.50 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.57 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None

Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Baseline (Process 1) 1.2.840.10008.1.2.4.50 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.57 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Baseline (Process 1) 1.2.840.10008.1.2.4.50 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.57 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Baseline (Process 1) 1.2.840.10008.1.2.4.50 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.57 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None

Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.57 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.57 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Explicit VR Little Endian 1.2.840.10008.1.2.1 RLE Lossless 1.2.840.10008.1.2.5 JPEG Lossless, Process 14 1.2.840.10008.1.2.4.70	SCU	None
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless (Process 14) 1.2.840.10008.1.2.4.70	SCU	None
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Explicit VR Little Endian 1.2.840.10008.1.2.1 JPEG Lossless, Non-Hierarchical (Process 14) 1.2.840.10008.1.2.4.57 JPEG Lossless, Process 14 1.2.840.10008.1.2.4.70	SCU	None

Table 2.3-15 Proposed Presentation Contexts – Export Study

2.3.2.2.2.3 SOP Specific Conformance – Export Study Limitations

The *syngo*® Dynamics Workplace does not support the Implicit VR Little Endian transfer syntax for the Real-World-Activity Export Study. However, the *syngo*® Dynamics Server does support the Implicit VR Little Endian transfer syntax and study data can also be manually exported from it's user interface when the receiving SCP only supports that transfer syntax.

The "Send to DICOM Node" option is not capable of converting the transfer syntax of the stored object, the receiving system must be able to receive the object as it is stored in syngo Dynamics. In this respect the syngo Dynamics Workplace DICOM Implementation does not conform to the DICOM Default Transfer Syntax support requirements.

2.4 COMMUNICATION PROFILES

2.4.1 Supported Communications Stacks

The *syngo*® Dynamics Workplace provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

2.4.2 OSI Stack

Not supported.

2.4.3 TCP/IP Stack

The *syngo*® Dynamics Workplace Print Manager uses the TCP/IP stack from the Microsoft Windows XP operating system upon which it executes.

2.4.3.1 Physical Media Support

The *syngo*® Dynamics Workplace Print Manager is not dependent on the physical medium over which the TCP/IP executes.

2.4.4 Point-to-Point Stack

Not Supported.

2.5 EXTENSIONS/SPECIALIZATIONS/PRIVATIZATIONS

The *syngo*® Dynamics Workplace has no extensions, specializations or privatizations of SOP Classes and Transfer Syntaxes.

2.6 CONFIGURATION

The configuration of the *syngo*® Dynamics Workplace Print Manager Application is stored in the Windows XP Registry. Support personnel typically perform configuration changes.

2.6.1 AE Title/Presentation Address Mapping

The AE Title for the *syngo*® Dynamics Workplace Print Manager is the NetBIOS Name of the computer. This parameter can be configured via the graphical user interface of the host.

For systems with which the *syngo*® Dynamics Workplace Print Manager acts as an SCU, the following information is needed:

The AE Title
The IP address
The listening port number

This information is used to create the Printer Descriptor file that is stored on the *syngo*® Dynamics Server.

2.6.2 Configurable Parameters

Not Applicable

2.7 SUPPORT OF EXTENDED CHARACTER SETS

The *syngo*® Dynamics Workplace supports the following character sets:

- ISO-IR 6 (default) Default repertoire
- ISO-IR 100 Latin Alphabet No. 1

The *syngo*® Dynamics Workplace does not support multi-byte characters.

3. MEDIA STORAGE CONFORMANCE STATEMENT

3.1 INTRODUCTION

This section specifies the *syngo*® Dynamics Workplace compliance to the DICOM Media Interchange. It details the DICOM Media Storage Application Profiles and roles that are supported.

This station provides DICOM interchange capabilities on CD, DVD and Magneto Optical Disc media with different application profiles supported for each media type. This support is dependent on the appropriate hardware being installed on the station.

Note that the format of this section follows the format described in DICOM Standard PS 3.2 (Conformance). Please refer to that part of the standard while reading this section.

3.2 IMPLEMENTATION MODEL

3.2.1 Application Data Flow Diagram

The Basic and Specific Application models for writeable and non-writeable media are shown in the following illustrations:

3.2.1.1 Description of the Data Flow Diagram for Writable Media.

The Display/Edit Application Entity (AE) handles the Directory Display, Image Viewing, Study Updating, Study Copying and Media Creation functionality for the writable media device. The Display/Edit Application Entity (AE) is commanded by the user to perform DICOM Services operating on the DICOM media through the use of buttons and menu selections on the graphical user interface of the station.

The Application models for writeable media devices are shown in Figure 3.2-1.

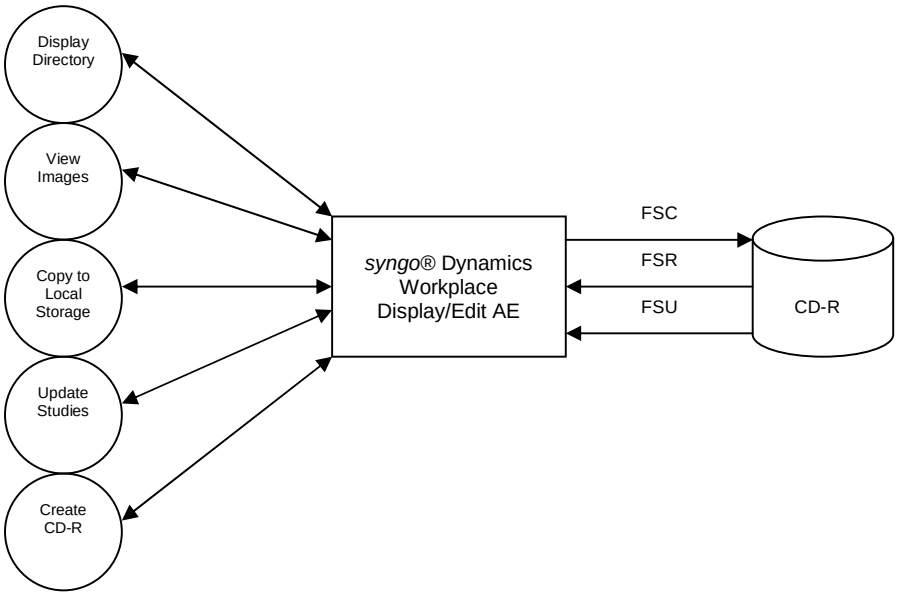

Figure 3.2-1 CD-R Implementation Model

3.2.1.2 Description of the Data Flow Diagram for the CDROM device.

The Display/Edit Application Entity (AE) handles the Directory Display, Image Viewing, and Study Copying functionality for the CDROM device. The Display/Edit Application Entity (AE) is commanded by the user to perform DICOM Services operating on the DICOM media through the use of buttons and menu selections on the graphical user interface of the station.

The Application models for the CDROM device are shown in Figure 3.2-2.

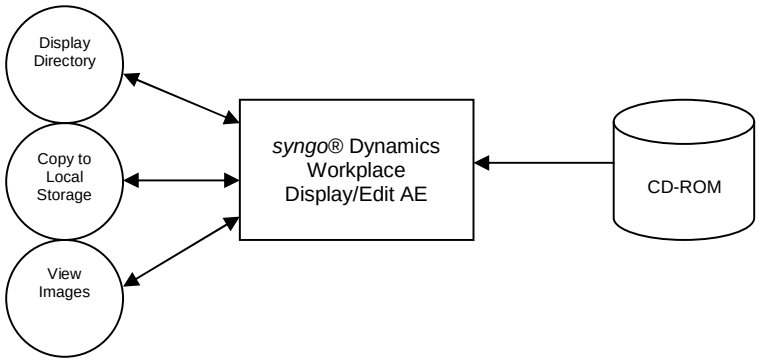

Figure 3.2-2 CDROM and DVDROM Implementation Model

3.2.1.3 Description of the Data Flow Diagram for the MOD device.

The Display/Edit Application Entity (AE) handles the Directory Display, Image Viewing, Study Updating, Study Copying and MOD Creation functionality for the MOD device. The Display/Edit Application Entity (AE) is commanded by the user to perform DICOM Services operating on the DICOM media through the use of buttons and menu selections on the graphical user interface of the station.

The Application models for the MOD device are shown in Figure 3.2-3.

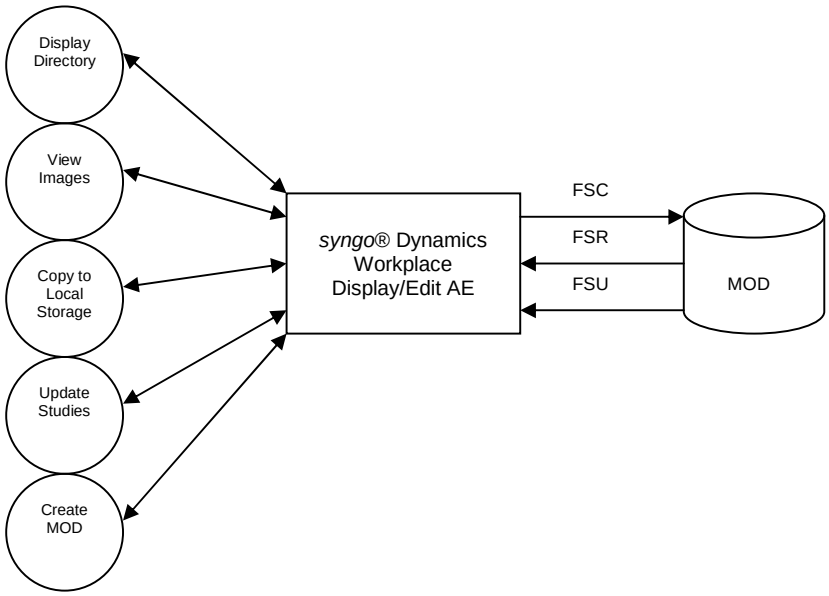

Figure 3.2-3 MOD Implementation Model

3.2.2.3.2.1.3 Description of the Data Flow Diagram for the DVD device.

The Display/Edit Application Entity (AE) handles the Directory Display, Image Viewing, Study Updating, Study Copying and DVD Creation functionality for the DVD device. The Display/Edit Application Entity (AE) is commanded by the user to perform DICOM Services operating on the DICOM media through the use of buttons and menu selections on the graphical user interface of the station.

The Application models for the DVD device are shown in Figure 3.2-4. Note that the *syngo*® Dynamics Workplace does not support any official Application Profiles for DVD. However, DICOM Media exchange files can be written and read along with a DICOMDIR in accordance with Figure 3.2-4.

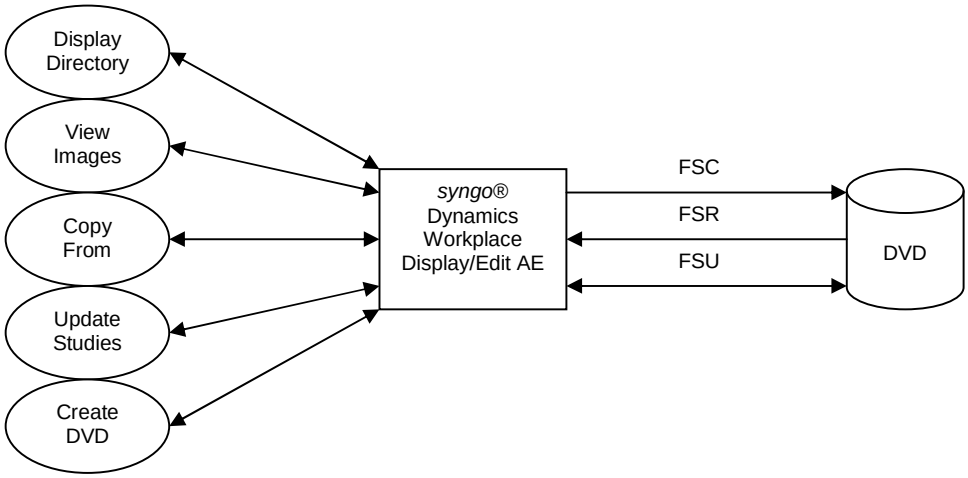

Figure 3.2-4 DVD Implementation Model

Functional Definition of Application Entities
The *syngo*® Dynamics Workplace has only one Application Entity: the Display/Edit Application.

The Display/Edit Application supports the following functions:

- Display a directory listing of the DICOM File Set (FSR)
- Display images from a DICOM File Set (FSR)
- Copy images from a DICOM File Set (FSR)
- Update or Delete DICOM File Sets (FSU)
- Create DICOM File Set on a CDROM/DVD or MOD (FSC)

3.2.3 Sequencing of Real World Activities
For writing on new MODs, it is necessary to format the MOD before the user can write a DICOM File Set.

A DICOM File Set must exist on the media for a DICOM File Set to be updated.

3.2.4 File Meta Information for Implementation Class and Version
The *syngo*® Dynamics Workplace Display/Edit Application uses the following implementation identifying parameters:

- File Meta Information Version 1
- Implementation Class UID 1.3.12.2.1107.5.8.11.105

3.3 APPLICATION ENTITY SPECIFICATIONS

3.3.1 Display/Edit Application Entity Specification

The Display/Edit Application Entity provides standard conformance to the DICOM Interchange Option of the Media Storage Service Class. The Application Profiles and roles are listed in Table 3.3-1.

Supported AP's	Real-World Activity	Roles	SC Option
STD-US-ID-MF-MOD128 STD-US-SC-MF-MOD128 STD-US-ID-MF-MOD230 STD-US-SC-MF-MOD230 STD-US-ID-MF-MOD650 STD-US-SC-MF-MOD650 STD-US-ID-MF-MOD12 STD-US-SC-MF-MOD12 STD-US-ID-MF-MOD23 STD-US-SC-MF-MOD23 STD-US-ID-MF- CDR STD-US-SC-MF-CDR STD-XABC-CD STD-XA1K-CD STD-XA1K-DVD STD-CTMR-MOD12 STD-CTMR-MOD23 STD-CTMR-CD STD-CTMR-DVD STD-GEN-DVD-JPEG	Display Directory	FSR	Interchange
STD-US-ID-MF-MOD128 STD-US-SC-MF-MOD128 STD-US-ID-MF-MOD230 STD-US-SC-MF-MOD230 STD-US-ID-MF-MOD650 STD-US-SC-MF-MOD650 STD-US-ID-MF-MOD12 STD-US-SC-MF-MOD12 STD-US-ID-MF-MOD23 STD-US-SC-MF-MOD23 STD-US-ID-MF- CDR STD-US-SC-MF-CDR STD-XABC-CD STD-XA1K-CD STD-XA1K-DVD STD-CTMR-MOD12 STD-CTMR-MOD23 STD-CTMR-CD STD-CTMR-DVD STD-GEN-DVD-JPEG	View Images*	FSR	Interchange
STD-US-ID-MF-MOD128 STD-US-SC-MF-MOD128 STD-US-ID-MF-MOD230 STD-US-SC-MF-MOD230 STD-US-ID-MF-MOD650 STD-US-SC-MF-MOD650 STD-US-ID-MF-MOD12 STD-US-SC-MF-MOD12	Copy to Local Storage	FSR	Interchange

Supported AP's	Real-World Activity	Roles	SC Option
STD-US-ID-MF-MOD23 STD-US-SC-MF-MOD23 STD-US-ID-MF-CDR STD-US-SC-MF-CDR STD-XABC-CD STD-XA1K-CD STD-XA1K-DVD STD-CTMR-MOD12 STD-CTMR-MOD23 STD-CTMR-CD STD-CTMR-DVD STD-GEN-DVD-JPEG			
STD-US-ID-MF-MOD128 STD-US-SC-MF-MOD128 STD-US-ID-MF-MOD230 STD-US-SC-MF-MOD230 STD-US-ID-MF-MOD650 STD-US-SC-MF-MOD650 STD-US-ID-MF-MOD12 STD-US-SC-MF-MOD12 STD-US-ID-MF-MOD23 STD-US-SC-MF-MOD23 STD-US-ID-MF- CDR STD-US-SC-MF-CDR STD-XABC-CD STD-XA1K-CD STD-XA1K-DVD STD-CTMR-MOD12 STD-CTMR-MOD23 STD-CTMR-CD STD-CTMR-DVD STD-GEN-DVD-JPEG	Update Studies	FSU	Interchange
STD-US-ID-MF-MOD128 STD-US-SC-MF-MOD128 STD-US-ID-MF-MOD230 STD-US-SC-MF-MOD230 STD-US-ID-MF-MOD650 STD-US-SC-MF-MOD650 STD-US-ID-MF-MOD12 STD-US-SC-MF-MOD12 STD-US-ID-MF-MOD23 STD-US-SC-MF-MOD23 STD-CTMR-MOD12 STD-CTMR-MOD23	Create MOD	FSC	Interchange
STD-US-SC-MF-CDR STD-XABC-CD STD-XA1K-CD	Create CD-R	FSC	Interchange
STD-XA1K-DVD STD-CTMR-DVD STD-GEN-DVD-JPEG	Create DVD	FSC	Interchange

Table 3.3-1 Display/Edit Application Entity Profiles, Real-World Activities, and Roles

* Partial Conformance – See 3.3.1.2.2 Real World Activity: View Images

The Display/Edit Application Entity provides support for Media Storage SOP Classes shown in Table 3.3-2.

Information Object Definition	SOP Class UID	Transfer Syntax	Transfer Syntax UID
DICOM Media Storage Directory	1.2.840.10008.1.3.10	Explicit VR Little Endian	1.2.840.10008.1.2.1
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossless (Process 14)	1.2.840.10008.1.2.4.70
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossless (Process 14)	1.2.840.10008.1.2.4.70
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossless (Process 14)	1.2.840.10008.1.2.4.70
CT Image	1.2.840.10008.5.1.4.1.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossless (Process 14)	1.2.840.10008.1.2.4.70
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		RLE Lossless Image Compression	1.2.840.10008.1.2.5
		JPEG Lossy, Baseline	1.2.840.10008.1.2.4.50
MR Image	1.2.840.10008.5.1.4.1.1.4	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossless (Process 14)	1.2.840.10008.1.2.4.70
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Little Endian	1.2.840.10008.1.2.1
		RLE Lossless Image Compression	1.2.840.10008.1.2.5
		JPEG Lossy, Baseline	1.2.840.10008.1.2.4.50
SC Image (grayscale)	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossless (Process 14)	1.2.840.10008.1.2.4.70
SC Image (palette color)	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossless (Process 14)	1.2.840.10008.1.2.4.70
X-Ray Angiographic Image	1.2.840.10008.5.1.4.1.1.12.1	JPEG Lossless (Process 14)	1.2.840.10008.1.2.4.57
		JPEG Lossless (Process 14)	1.2.840.10008.1.2.4.70

Table 3.3-2 Supported Media Storage SOP Classes

3.3.1.1 File Meta Information for Display/Edit Application Entity

The *syngo*® Dynamics Workplace Source Application Entity Title will be the AE Title assigned to the *syngo*® Dynamics Workplace.

3.3.1.2 Real World Activities for the Display/Edit Application Entity

The *syngo*® Dynamics Workplace Display/Edit Application Entity is used for the following real world activities:

- Display Directory Listing - In this activity the Display/Edit Application Entity acts as a File-Set Reader.
- Viewing of Images - In this activity the Display/Edit Application Entity acts as a File-Set Reader.

- Copy to Local Storage - In this activity the Display/Edit Application Entity acts as a File-Set Reader.
- Updating Images - In this activity the Display/Edit Application Entity acts as a File-Set Updater.
- Creating a DVD, MOD or CD-R - In this activity the Display/Edit Application Entity acts as a File-Set Creator.

3.3.1.2.1 Real World Activity: Display Directory

The *syngo*® Dynamics Workplace Display/Edit Application is an FSR when reading the directory of the medium. This will result in an overview of the patients, studies and images in the *syngo*® Dynamics Workplace Study List.

3.3.1.2.1.1 Media Storage Application Profile for the RWA: Display Directory

For the list of Application Profiles that invoke this AE for the Display Directory RWA, see Table 3.3.-1. There are no extensions or specializations.

3.3.1.2.2 Real World Activity: View Images

The *syngo*® Dynamics Workplace Display/Edit Application is an FSR when viewing images from the medium.

The *syngo*® Dynamics Workplace partially supports the multi-frame ultrasound "image display" Application Profile for MOD and the multi-frame ultrasound "spatial calibration" Application Profile for DVD, MOD and CD-R. Table 3.3-3 shows the supported image formats when viewing studies from removable media.

Photometric Interpretation	Transfer Syntax	Bits Allocated	Bits Stored	Samples Per Pixel	Planar Configuration
MONOCHROME1	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	8	8	1	N/A
	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	16	16	1	N/A
	JPEG Lossy Baseline (Process 1) 1.2.840.10008.1.2.4.50	8	8	1	N/A
	JPEG Lossless, Non-Hierarchical (Process 14) 1.2.840.10008.1.2.4.57	8	8	1	N/A
	JPEG Lossless, Non-Hierarchical (Process 14) 1.2.840.10008.1.2.4.70	8	8	1	N/A
	RLE Lossless Image Compression 1.2.840.10008.1.2.5	8	8	1	N/A
MONOCHROME2	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	8	8	1	N/A
	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	16	16	1	N/A
	JPEG Lossy Baseline (Process 1) 1.2.840.10008.1.2.4.50	8	8	1	N/A
	JPEG Lossless, Non-Hierarchical (Process 14) 1.2.840.10008.1.2.4.57	8	8	1	N/A
	JPEG Lossless, Non-Hierarchical (Process 14) 1.2.840.10008.1.2.4.70	8	8	1	N/A
	RLE Lossless Image Compression 1.2.840.10008.1.2.5	8	8	1	N/A
RGB	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	8	8	3	0 - Chunky
	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	8	8	3	1 - Planar
PALETTE COLOR	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	8	8	1	N/A
	RLE Lossless Image Compression 1.2.840.10008.1.2.5	8	8	1	N/A
	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	16	16	1	N/A
	RLE Lossless Image Compression 1.2.840.10008.1.2.5	16	16	1	N/A

YBR_FULL	Uncompressed Explicit VR Little Endian 1.2.840.10008.1.2.1	8	8	3	0 - Chunky
	RLE Lossless Image Compression 1.2.840.10008.1.2.5	8	8	3	0 - Chunky
	RLE Lossless Image Compression 1.2.840.10008.1.2.5	8	8	3	0 - Planar
YBR_FULL_422	JPEG Lossy Baseline (Process 1) 1.2.840.10008.1.2.4.50	8	8	3	0 - Planar

Table 3.3-3 Media Review Supported Image Formats

3.3.1.2.2.1 Media Storage Application Profile for the RWA: View Images
For the list of Application Profiles that invoke this AE for the View Images RWA, see Table 3.3-1. There are no extensions or specializations.

3.3.1.2.3 Real World Activity: Copy to Local Storage
The *syngo*® Dynamics Workplace Display/Edit Application is an FSR when copying studies from the medium to local storage. The Display/Edit Application will copy SOP Instances from the medium directory list to local storage.

3.3.1.2.3.1 Media Storage Application Profile for the RWA: Copy to Local Storage
For the list of Application Profiles that invoke this AE for the Copy to Local Storage RWA, see Table 3.3 -1. There are no extensions or specializations.

3.3.1.2.4 Real World Activity: Update Studies
The *syngo*® Dynamics Workplace Display/Edit Application is an FSU using the Interchange option when adding studies to the medium. The Display/Edit Application will copy SOP Instances from Local Storage to the medium.

The Display/Edit Application cannot delete studies from media..

The Display/Edit Application cannot add studies to MOD media that has been write-protected.

3.3.1.2.4.1 Media Storage Application Profile for the RWA: Update Studies
For the list of Application Profiles that invoke this AE for the Copy to Local Storage RWA, see Table 3.3-1. There are no extensions or specializations.

3.3.1.2.5 Real World Activity: Create MOD
The *syngo*® Dynamics Workplace Display/Edit Application will act as an FSC when creating an MOD. A DICOMDIR is created and studies can be exported to the MOD (See RWA: Update Studies.)

3.3.1.2.5.1 Media Storage Application Profile for the RWA: Create MOD
For the list of Application Profiles that invoke this AE for the Create MOD RWA, see Table 3.3-1. There are no extensions or specializations.

3.3.1.2.6 Real World Activity: Create CD-R/DVD
The *syngo*® Dynamics Workplace Display/Edit Application is an FSC when creating a CD-R/DVD. A DICOMDIR is created and studies can be exported to the CD-R/DVD (See RWA: Update Studies.)

3.3.1.2.6.1 Media Storage Application Profile for the RWA: Create CD-R/DVD
For the list of Application Profiles that invoke this AE for the Create CD-R RWA, see Table 3.3-1. There are no extensions or specializations.

3.4 PRIVATE ELEMENTS EXPORTED TO MEDIA

The *syngo*® Dynamics Workplace may not export all private elements of certain US SOP class objects if the private elements contain raw image data.

3.5 AUGMENTED AND PRIVATE APPLICATION PROFILES

The *syngo*® Dynamics Workplace has no augmented or private Application Profiles.

3.6 EXTENSIONS/SPECIALIZATIONS/PRIVATIZATIONS

The *syngo*® Dynamics Workplace has no extensions, specializations or privatizations of SOP Classes and Transfer Syntaxes.

3.7 CONFIGURATION

The Source AE Title encoded in the File Meta Information is derived from the AE Title of the workstation.

3.8 SUPPORT OF EXTENDED CHARACTER SETS

The *syngo*® Dynamics Workplace supports the following character sets:

- ISO-IR 6 (default) Default repertoire
- ISO-IR 100 Latin Alphabet No. 1

The *syngo*® Dynamics Workplace does not support multi-byte characters.